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Eastern Pineshoot Borer
SHOOT BORER SECTION
CURRENT SERIAL RECORDSLouis F. Wilson¹

The eastern pineshoot borer, *Eucosma gloriola* Heinrich, also known as the white pine tip moth, American pine shoot moth, white pine shoot borer, and *tordeuse americaine du pin*, is injurious to young conifers in northeastern North America. Preferring the new shoots of sapling conifers, this insect heavily attacks trees planted for the Christmas tree market. Affected trees are left with 2- to 4-inch terminals instead of the 8- to 12-inch size growers prefer.

Originally discovered in Connecticut, this shoot boring insect is now known to occur throughout the northeastern United States and Canada from Maine west to southern Manitoba, south through the Lake States through northern Ohio, Pennsylvania, and New Jersey, wherever its hosts grow.

Hosts

This insect has been reared from or recorded on many con-

ifers, especially pines. It prefers eastern white and Scotch pines but has been observed feeding on jack, red, Scotch, Austrian, pitch, and mugo pines. It also occurs occasionally on white spruce and Douglas-fir. Although it attacks trees up to 30 feet tall, it is most injurious to conifers 3 to 8 feet tall.

Injury

Injury by this borer is seldom noticed until after the larva has left the shoot. Both terminal and lateral shoots are attacked. The first evidence of attack occurs about mid-June when the outer 6 to 8 inches of the shoot begins to droop and turns yellowish. Frequently the shoot breaks over near the base (fig. 1) or drops off leaving a distinct flat stub. Terminals are more susceptible to breakage than laterals. Some shoots, especially on Douglas-fir, may wilt and droop and resemble a shepherd's crook before yellowing.

The pith of the attacked shoot is hollowed out to form a 6- to 8-

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Figure 1.—Broken, off-color shoots of Scotch pine damaged by eastern pineshoot borer larvae. (Photo courtesy Michigan State University)

inch-long gallery (fig. 2). The exit hole made by the larva near the base of the gallery is a characteristic indicator of this insect's damage (fig. 3). Small shoots that die before mid-June are usually those in which the insects have died prematurely. Such shoots contain only a partially excavated gallery which is filled with hardened pitch.

The injury causes trees to become stunted and crooked; crooks and forks develop after terminals are killed. The general shape of the tree is ruined when laterals are killed.

Description

The egg of the borer is yellowish, flattened, and about 0.3 mm. in diameter. It is either circular or slightly elliptical in form and

is nearly invisible if deposited on the needle sheath.

The fully developed larva is dirty white to gray and $\frac{1}{2}$ to $\frac{3}{4}$ inch long (fig. 4). Its head is yellowish-brown with a round blackish spot. The thoracic shield behind the head is pale yellow. The pupa is brown. Pupation takes place in a light brown cocoon covered with clinging soil particles and located in the soil.

The adult is a coppery-red moth with two shiny transverse lead-gray bands on the forewings (fig. 5). The hind wings are grayish-brown. Total wing expanse is about $\frac{5}{8}$ inch.

Life History and Habits

Depending on locality, the adults emerge in late April to



Figure 2.—Pine shoot hollowed out by the eastern pineshoot borer larva. (Photo courtesy Michigan State University)

mid-May or soon after the buds burst. The moths are rarely seen during the day and fly short distances between trees only when disturbed. Then they conceal themselves again between the needles near the orange needle sheaths. Mating and egg laying occur at night.

After mating, each female usually deposits one egg on a needle sheath located on each of several different new shoots. Within 2 weeks the larva emerges from the egg and shortly after bores into the shoot behind a needle fascicle, or occasionally behind a cone or bark scale along the shoot. It mines downward in the pith, the gallery becoming wider as the larva grows. Normally only one larva occurs in each shoot, but up to six have been found when the infestation is heavy. When several occur together, only one or two or none survive, particularly in small-diameter shoots.

By mid-June most larvae have moulted four times. These fully developed larvae reverse their direction in the shoot and mine upward for a short distance. When nearly mature, the larva cuts into the woody portion of the stem, usually near the base of the gallery. This weakens the shoot and causes it to break when touched or exposed to high winds. Between mid-June and early July the larva bores an exit hole (fig. 3) and drops to the ground. After spinning a cocoon in the duff or topsoil beneath the host, it pupates and remains in this state over winter.

Chemical Control

At this time there are no chemical insecticides registered for use in controlling the eastern pine-shoot borer. Ask your State agri-

cultural experiment station or your county agricultural agent or other local source of information whether any recommendations have been developed for chemical control of this insect.



Figure 3.—Exit hole of the eastern pineshoot borer larva. (Photo courtesy Michigan State University)

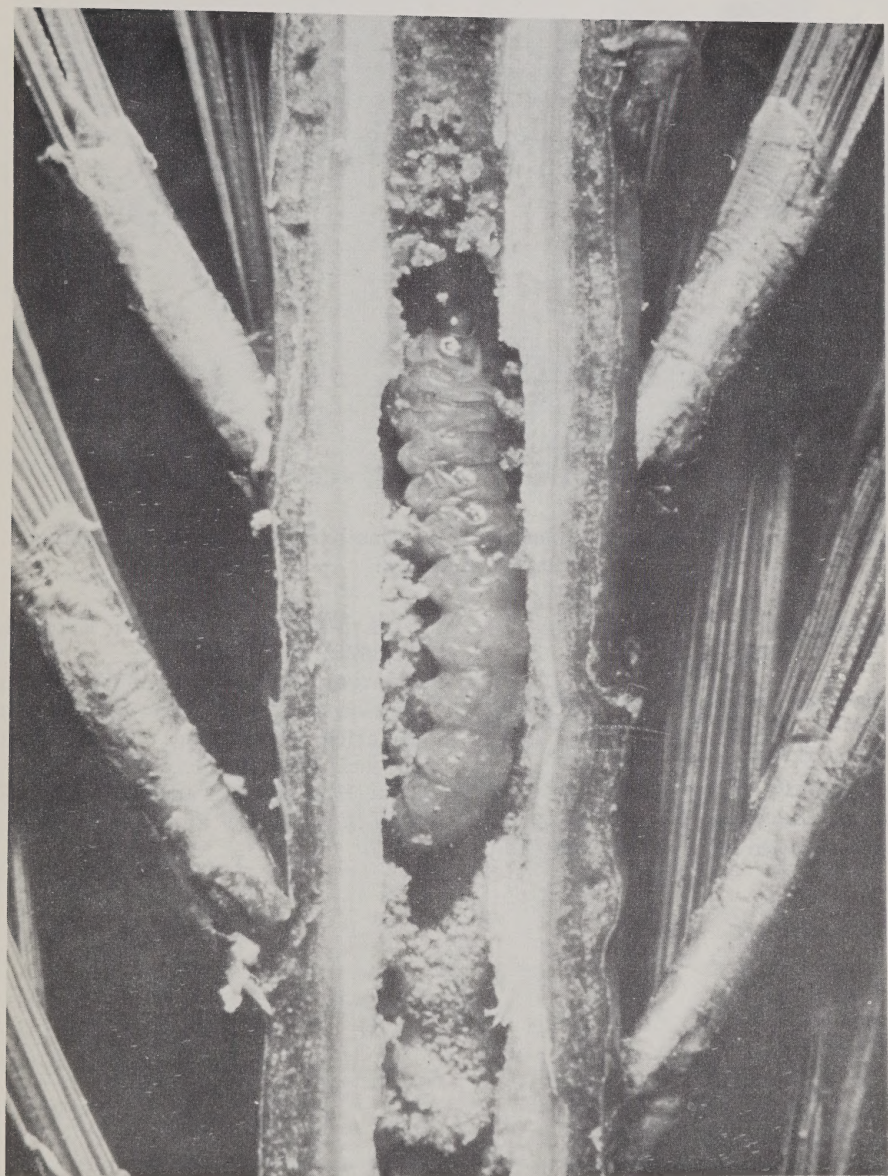


Figure 4.—Fully developed larva in its gallery. (Photo courtesy Michigan State University)



Figure 5.—Adult eastern pineshoot borer moth. (Photo courtesy Michigan State University)

References

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